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10/697,590	10/30/2003	Richard Holzmann	TMS-0001	8309
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			2185	

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/697,590	HOLZMANN, RICHARD
	Examiner	Art Unit
	Jae U. Yu	2185

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 30 October 2003.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-16 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-16 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 30 October 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

DETAILED ACTION

The instant application having Application No. 10/697,590 has a total of 16 claims pending in the application, there are 2 independent claims and 14 dependent claims, all of which are ready for examination by the examiner.

Oath/Declaration

The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in 37 C.F.R. 1.63.

Drawings

The applicant's drawings submitted on 10/30/2003 are acceptable for examination purposes.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-2, 4 and 12-13 are rejected under 35 U.S.C. 103 (a) as being obvious over Schaeffer et al. (US 5,524,190) in view of Young (US 6,898,681 B2).

2. As per independent **claim 1**, “A non-volatile storage media.” **Schaeffer et al.** disclose a non-volatile storage **11 in column 2, at line 10.**

“A memory module.” **A Random Access Memory (RAM) 14 in column 2, at lines 12-13**

“An interface module for communicating with a computer network.” **Schaeffer et al.** disclose a communication adapter **34 for connecting the workstation to a data processing network in column 2, at lines 19-20.**

“A control module [**CPU 10, Figure 1**] operatively coupled to the non-volatile storage media [**non-volatile storage 11, Figure 1**], the memory module [**RAM 14, Figure 1**], and the interface module [**communication adapter 34, Figure 1**].”

“A segment queue stored by said control module for storing a list of data segments that have been updated in said memory module.” **In column 5, at lines 53-55, Schaeffer et al. disclose, “Each time a user makes a change to a document, a copy of the command object that represents the change is placed onto the end of a queue.”**

The “change to a document” exists inside an application (Column 5, Lines 25-26), and the application program is resident in the RAM (Column 5, Lines 12-16). Therefore, the

“change to a document” corresponds to the “data segments that have been updated in memory module” from the claim.

“Said control module, when a time interval expires, copying the data segments listed in said segment queue to said non-volatile media.” **In column 6, at lines 7-8, Schaeffer et al. disclose, “building the log in a non-volatile store based on objects in the queue”.** However, Schaeffer et al. do not disclose expressly the limitation “when a time interval expires”.

Young discloses, “It is standard practice to make backups of data from disc volumes at regular intervals” in column 1, at lines 33-34. In order to carry out the backup process, the expiration of the “regular intervals” has to be determined inherently.

Schaeffer et al. and Young are analogous art because they are from the same field of endeavor of data preservation.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. by setting regular time intervals for data backup as taught by Young in column 1, at lines 33-34.

The motivation for doing so would have been to “enable data to be recovered in the event of a system failure” and to “allow some off-line analysis to be performed on data” as expressly taught by Young in column 1, at lines 34-36.

Therefore, it would have been obvious to combine Young with Schaeffer et al. for the benefit of data recovery and off-line analysis to obtain the invention as specified in claim 1.

3. As per claim 2, "the time interval is defined by a user." **In column 6, at lines 53-55, Schaeffer et al. disclose, the saving process can occur at a "user specified time".**

4. As per claim 4, "the memory module is a RAM module." **Schaeffer et al. disclose a RAM 14 in Figure 1.**

5. As per independent claim 12, "Receiving a memory access request **[Opening a document (memory read request), Column 6, Lines 26-27]** from an external device [**"Keyboard", Column 2, Line 16**], said memory request identifying a particular segment [**"Document's saved image", Column 6, Line 28**] in the memory module [**"Cache", Column 6, Line 29**]."

"Updating the requested data segment in the memory module". The "**change made to the document (Column 6, Lines 4-5)**" corresponds to "updating the requested data segment" from the claim wherein the document is in cache (Column 6, Line 28-29).

"Recording in a queue that the data segment has been updated". **In column 5, at lines 53-55, Schaeffer et al. disclose, "Each time a user makes a change to a document, a copy of the command object that represents the change is placed onto the end of a queue."**

"When said time interval has expired, copying the segments recorded in said queue to the non-volatile storage media and clearing the segment from the queue." **In Figure 2B, element 270 discloses "remove object from queue and save it in the command log on disk".** However, Schaeffer et al. do not disclose expressly the limitation "when said time interval has expired" and "determining whether a preset time-interval has expired".

Young discloses, "It is standard practice to make backups of data from disc volumes at regular intervals" in column 1, at lines 33-34. In order to carry out the backup process, the expiration of the "regular intervals" has to be determined inherently.

Schaeffer et al. and Young are analogous art because they are from the same field of endeavor of data preservation.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. by setting regular time intervals for data backup as taught by Young in column 1, at lines 33-34.

The motivation for doing so would have been to "enable data to be recovered in the event of a system failure" and to "allow some off-line analysis to be performed on data" as expressly taught by Young in column 1, at lines 34-36.

Therefore, it would have been obvious to combine Young with Schaeffer et al. for the benefit of data recovery and off-line analysis to obtain the invention as specified in claim 12.

6. As per **claim 13**, "Said time interval is user defined." In column 6, at lines 53-55, Schaeffer et al. disclose, the saving process can occur at a "user specified time".

7. **Claims 3 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaeffer et al. (US 5,524,190) and Young (US 6,898,681 B2) as applied to claims 1 and 12 above, and further in view of Yan et al. (US 2004/0103438 A1).

8. As per **claim 3**, Schaeffer et al. and Young disclose the system recited in claim 1.

Schaeffer et al. and Young do not disclose expressly, "the time interval is determined by a threshold number of data segments listed in said segment queue."

Yan et al. disclose in paragraph 39, at lines 6-8, "When the number of events in the queue reaches a predefined threshold, some portion of the events or all of the events can be transferred from the queue." "The number of events"

corresponds to the “number of data segments” from the claim. The time taken for the “number of events in the queue” to reach the “predefined threshold” corresponds to the “time interval” from the claim.

Schaeffer et al., Young and Yan et al. are analogous art because they are from the same field of endeavor of transferring data to different storages.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. and Young by including the step of transferring data from a queue when the number of data in the queue reaches a threshold value as taught by Yan et al. in paragraph 39, at lines 6-8.

The motivation for doing so would have been to “provide the capability to handle a burst of events, in order to prevent the queue from accumulating too many events before the events are transferred in response to a time-out signal” as expressly taught by Yan et al. in paragraph 39, at lines 6-10.

Therefore, it would have been obvious to combine Yan et al. with Schaeffer et al. and Young for the benefit of queue overflow prevention to obtain the invention as specified in claim 3.

9. As per claim 14, Schaeffer et al. and Young disclose the system recited in claim 12.

Schaeffer et al. and Young do not disclose expressly, “Said time interval is determined by a threshold number of data segments listed in said segment queue.”

Yan et al. disclose in paragraph 39, at lines 6-8, "When the number of events in the queue reaches a predefined threshold, some portion of the events or all of the events can be transferred from the queue." "The number of events" corresponds to the "number of data segments" from the claim. The time taken for the "number of events in the queue" to reach the "predefined threshold" corresponds to the "time interval" from the claim.

Schaeffer et al., Young and Yan et al. are analogous art because they are from the same field of endeavor of transferring data to different storages.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. and Young by including the step of transferring data from a queue when the number of data in the queue reaches a threshold value as taught by Yan et al. in paragraph 39, at lines 6-8.

The motivation for doing so would have been to "provide the capability to handle a burst of events, in order to prevent the queue from accumulating too many events before the events are transferred in response to a time-out signal" as expressly taught by Yan et al. in paragraph 39, at lines 6-10.

Therefore, it would have been obvious to combine Yan et al. with Schaeffer et al. and Young for the benefit of queue overflow prevention to obtain the invention as specified in claim 14.

10. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaeffer et al. (US 5,524,190) and Young (US 6,898,681 B2) as applied to claim 1 above, and further in view of Yanai et al. (US 5,341,493).

11. As per claim 5, Schaeffer et al. and Young disclose the system recited in claim 1.

Schaeffer et al. and Young do not disclose expressly, “a temporary power supply” [“**Battery/UPS 24**”, **Figure 1**, Yanai et al.].

Schaeffer et al. and Young do not disclose expressly “Upon shutdown of the system or failure of external power to the system, the control module copying the data stored in the memory module to the non-volatile storage media.” **Yanai et al. disclose in column 2, at lines 58-63, “Upon detecting power failure, the uninterruptible power supply maintains power to disk adapters, cache, and disk drive unit, until all data write commands and associated data pending in cache have been serviced and written to the appropriate disk drive.”** The “cache” corresponds to the “memory module” from the claim, and the “disk drive” corresponds to the “non-volatile storage media” from the claim.

Schaeffer et al., Young and Yanai et al. are analogous art because they are from the same field of endeavor of data preservation.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. and Young by including a battery/UPS that provides power when the main power supply fails as taught by Yanai et al. in column 2, at lines 58-63.

The motivation for doing so would have been for "assuring completion of data writes to a storage disk upon failure of main electrical power" as expressly taught by Yanai et al. in column 1, at lines 62-64.

Therefore, it would have been obvious to combine Yanai et al. with Schaeffer et al. and Young for the benefit of data preservation during power failure to obtain the invention as specified in claim 5.

12. As per **claim 6**, "Upon shutdown of the system of failure of external power to the system, said temporary power supply providing power to the system." **Yanai et al. disclose in column 2, at lines 58-60, "Upon detecting power failure, the uninterruptible power supply maintains power to disk adapters, cache, and disk drive unit"**

13. **Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaeffer et al. (US 5,524,190) and Young (US 6,898,681 B2) as applied to claims 1 and 12 above, and further in view of Gittins et al. (US 5,961,651).**

14. As per claim 7, Schaeffer et al. and Young disclose the system recited in claim 1.

Schaeffer et al. and Young do not disclose expressly, "Said segment queue lists the earliest-updated data segment in the highest priority queue position."

Gittins et al. disclose a "first-in first-out (FIFO) queue" in column 6, at line 11. The "first-in" data corresponds to the "earliest-updated data" from the claim. The "first-in" data is transferred out of the queue first ("first-out"), which means that the data is stored in the "highest priority queue position".

Schaeffer et al., Young and Gittins et al. are analogous art because they are from the same endeavor of managing data among a plurality of storage devices.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. and Young by including the "first-in first out (FIFO) queue" as taught by Gittins et al. in column 6, at line 11.

The motivation for doing so would have been "providing the application program with a linear history of events generated by the metadevices" as expressly taught by Gittins et al. in column 6, at lines 12-13.

Therefore, it would have been obvious to combine Gittins et al. with Schaeffer et al. and Young for the benefit of keeping a linear history of events to obtain the invention as specified in claim 7.

15. As per claim 15, Schaeffer et al. and Young disclose the method recited in claim 12.

Schaeffer et al. and Young do not disclose expressly, "the step of organizing the data segments recorded in the queue in the order the segments are recorded".

Gittins et al. disclose a "first-in first-out (FIFO) queue" in column 6, at line 11. The "first-in" data is transferred out of the queue first ("first-out"), which means that the contents of the queue are organized so that the content recorded earlier is transferred out of the queue earlier than the other contents.

Schaeffer et al., Young and Gittins et al. are analogous art because they are from the same endeavor of managing data among a plurality of storage devices.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. and Young by including the "first-in first out (FIFO) queue" as taught by Gittins et al. in column 6, at line 11.

The motivation for doing so would have been "providing the application program with a linear history of events generated by the metadevices" as expressly taught by Gittins et al. in column 6, at lines 12-13.

Therefore, it would have been obvious to combine Gittins et al. with Schaeffer et al. and Young for the benefit of keeping a linear history of events to obtain the invention as specified in claim 15.

16. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaeffer et al. (US 5,524,190) and Young (US 6,898,681 B2) as applied to claim 1 above, and further in view of Baber et al. (US 6,658,485 B1).

17. As per claim 8, Schaeffer et al. and Young disclose the system recited in claim 1.

Schaeffer et al. and Young do not disclose expressly, "Said segment queue is manipulated by a user to customize the priorities of the data segments listed in said queue".

Baber et al. disclose in column 9, at lines 43-46, "An interface may be provided whereby a human user can request that messages from a server be delivered in some different order than the server has queued them for transmission", wherein the "different order" corresponds to the customized "priorities" from the claim.

Schaeffer et al., Young and Baber et al. are analogous art because they are from the same field of endeavor of transferring data to different storage modules.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. and Young by including the interface that allows a user to change the order of data transmission from a queue as taught by Baber et al. in column 9, at lines 43-46.

The motivation for doing so would have been "the flexibility to respond to changes in dynamic, volatile network environments, as well as changes in user's wishes or requirements" as expressly taught by Baber et al. in the abstract.

Therefore, it would have been obvious to combine Baber et al. with Schaeffer et al. and Young for the benefit of data transmission flexibility to obtain the invention as specified in claim 8.

18. As per claim 9, Schaeffer et al. and Young disclose the system recited in claim 1.

Schaeffer et al. and Young do not disclose expressly, "Said segment queue is dynamically arranged by said control module."

Baber et al. disclose in column 11, at lines 40-42, "the queuing mechanism on the sender's side then reorders it segment queue accordingly". The "queuing mechanism" (Element 320, Figure 3B) corresponds to the "control module" from the claim, and the re-ordering process is carried out "dynamically" as disclosed in column 11, at lines 6-8.

Schaeffer et al., Young and Baber et al. are analogous art because they are from the same field of endeavor of transferring data to different storage modules.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. and Young by allowing the segment queue to be re-ordered dynamically as taught by Baber et al. in column 11, at lines 6-8 and 40-42.

The motivation for doing so would have been "the flexibility to respond to changes in dynamic, volatile network environments, as well as changes in user's wishes or requirements" as expressly taught by Baber et al. in the abstract.

Therefore, it would have been obvious to combine Baber et al. with Schaeffer et al. and Young for the benefit of data transmission flexibility to obtain the invention as specified in claim 9.

19. Claims 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schaeffer et al. (US 5,524,190) and Young (US 6,898,681 B2) as applied to claims 1 and 12 above, and further in view of Hashimoto (US 6,880,042 B2).

20. As per claim 10, Schaeffer et al. and Young disclose the system recited in claim 1.

Schaeffer et al. and Young do not disclose expressly, "Said segment queue is arranged in sequential order corresponding to the order of memory segments in said non-volatile storage media."

Hashimoto discloses in column 7, at lines 18-20, "sorting the cached write data in the order of an address in the magnetic recording disk". The "cached write data" corresponds to the "segment queue" from the claim, and the "order of and address in the magnetic recording disk" corresponds to the "order of memory segments" in the "non-volatile storage media" from the claim.

Schaeffer et al., Young and Hashimoto are analogous art because they are from the same field of endeavor of managing and transferring data to different storage modules.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. and Young by including a cache whose content is arranged corresponding to the address in the magnetic disk as taught by Hashimoto in column 7, at lines 18-20.

The motivation for doing so would have been to reduce “useless seek operation of the magnetic head, and accordingly, improves the performance of storing the write data in the magnetic recording disk” as expressly taught by Hashimoto in column 2, at lines 36-41.

Therefore, it would have been obvious to combine Hashimoto with Schaeffer et al. and Young for the benefit of improved disk performance to obtain the invention as specified in claim 10.

21. As per claim 16, Schaeffer et al. and Young disclose the method recited in claim 12.

Schaeffer et al. and Young do not disclose expressly, “the step of organizing the data segments recorded in the queue in sequential order corresponding to the order of memory segments in said non-volatile media”.

Hashimoto discloses in column 7, at lines 18-20, “sorting the cached write data in the order of an address in the magnetic recording disk”. The “cached write data” corresponds to the “segment queue” from the claim, and the “order of and address in the magnetic recording disk” corresponds to the “order of memory segments” in the “non-volatile storage media” from the claim.

Schaeffer et al., Young and Hashimoto are analogous art because they are from the same field of endeavor of managing and transferring data to different storage modules.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. and Young by including a cache whose content is arranged corresponding to the address in the magnetic disk as taught by Hashimoto in column 7, at lines 18-20.

The motivation for doing so would have been to reduce "useless seek operation of the magnetic head, and accordingly, improves the performance of storing the write data in the magnetic recording disk" as expressly taught by Hashimoto in column 2, at lines 36-41.

Therefore, it would have been obvious to combine Hashimoto with Schaeffer et al. and Young for the benefit of improved disk performance to obtain the invention as specified in claim 16.

22. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schaeffer et al. (US 5,524,190) and Young (6,898,681 B2) as applied to claim 1 above, and further in view of Chang et al. (US 2005/0081099 A1).

23. As per claim 11, Schaeffer et al. and Young disclose the system recited in claim 1.

Schaeffer et al. and Young do not disclose expressly, "a second segment queue for storing a list of data segments that have been updated during the time that said control module copied data segments listed in said first segment queue to said non-

volatile storage media". **Chang et al. disclose a "hold queue 640" in Figure 6**, which corresponds to the "second segment queue" from the claim. **Chang et al. disclose on page 7, at lines 1-3 that the Write I/O operation is sent to a hold queue when the point-in-time copies are made among the hard disks (Figure 5, element 540).**

Schaeffer et al. and Young do not disclose expressly "Copying said data segments listed in said second segment queue to said non-volatile storage media." **Figure 9 of Chang et al. disclose the step "output suspended I/O request in hold queue to storage system" (element 930).**

Schaeffer et al., Young and Chang et al. are analogous art because they are from the same endeavor of data backup/archiving.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Schaeffer et al. and Young by including a "hold queue" that stores updated data during backup as taught by Chang et al on page 7, at lines 1-3.

The motivation for doing so would have been that "the metadata associated with the point-in-time backup copy of the data in the storage system, the data in the storage system, and the file system metadata remain consistent during the backup operation" as taught expressly by Chan et al. in column 2, at paragraph 21.

Therefore, it would have been obvious to combine Chang et al. with Schaeffer et al. and Young for the benefit of data consistency to obtain the invention as specified in claim 11.

Relevant Art Cited by Examiner

The following prior art made of record and not relied upon is cited to establish the level of skill in the applicant's art and those arts considered reasonably pertinent to applicant's disclosure. See MPEP 707.05 (C).

The following reference teaches restoring data based on log.

<u>U.S. Publication Number</u>	<u>Figures</u>
2003/0191918	1 and 3

Conclusion

1. Claims Rejected in the Application

Per instant office action, claims 1-16 have received a first action on the merits and are subject of a first action non-final.

2. Direction of Future Correspondences

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jae U. Yu whose telephone number is 571-272-1133. The examiner can normally be reached on M-F 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald A. Sparks can be reached on 571-272-4201. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 19, 2006

Jae Un Yu
Patent Examiner
Art Unit 2185



DONALD SPARKS
SUPERVISORY PATENT EXAMINER